



News Release

## **Photovoltaic stars in San Francisco**

Festo handling solutions at Intersolar North America 2011

**Speed, precision, and zero-defect quality – that is what Festo’s handling solutions for the photovoltaic industry have to offer. At its booth #9557, Festo, a global automation technology company, will be showing its latest solutions for wafer, thin-film, and roll-to-roll production.**

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**SAN FRANCISCO, July 12, 2011** — More than 20,000 visitors, 600 exhibitors, and 200 speakers will take part in Intersolar North America, a showcase for the photovoltaic industry held at the Moscone Center from July 12-14.

The stars of assembly automation at the Festo booth include the 2010 Intersolar Photovoltaic Production Technology Award Winning high-speed H-gantry with a Bernoulli gripper for the contactless gripping of solar cells, and the 2011 Intersolar Photovoltaic Production Award Finalist, the Festo sliding fork for loading and unloading glass substrates. Also featured by Festo at Intersolar 2011 are air-bearing rails for the contactless transport of thin-film cells and lifting solutions.

### **High-speed H-gantry**

The award winning high-speed H-Gantry beats all previous speed records. It is 30 percent faster than any conventional Cartesian handling system. It accelerates to a

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speed of 4.92 feet (1.5 m) per second, at a rate of 65.61 feet (20 m) per seconds<sup>2</sup>. Festo has developed this high speed handling system for dynamic assembly operations in photovoltaics, electronics, small parts handling, and all other applications in which small and light mass-produced items need to be positioned fast and flexibly.

This new 3D/planar surface gantry covers a significantly larger rectangular working area than robot systems with delta kinematic mechanisms, which can cover only circular or kidney-shaped areas. A further disadvantage of delta robots are their high cost, their mass of approximately 330 pounds (150 kg), and the large footprint required by these robots.

### **Contactless gripping**

The Bernoulli gripper picks up work pieces such as silicon-based wafers by contactless means. In order to do this, an overpressure is created at the Bernoulli gripper, while at the same time a vacuum is generated at the surface to be gripped, thus causing the wafer to be held without contact because of the equilibrium established between the two opposing forces. During this process, an approximate .02 -.12 inch (0.5 mm to 3 mm) distance is maintained between the gripper and the gripping surface of the work piece.

## **The 2011 Intersolar Award nominee — the Festo sliding fork**

At the front end of the manufacture of thin film solar cells, .157 inch (4 mm) thick glass is fed into various process chambers and coated. This process area is under high vacuum and at a temperature of approximately 392°F (200°C). Traditionally, special clean-room robots have been used to transport the coated glass from one process chamber to the next.

A less expensive and more compact alternative to robots is the infinitely adjustable telescopic Festo “sliding fork” handling system. Its telescopic capability with its triple transmission ratio allows strokes of up to 6.56 feet (2 m). The installation space required is governed by the work piece size. Festo offers a choice of drive types, with servo-pneumatic drives for high vacuum and electric drives for applications under atmospheric conditions.

### **Air-bearing rails**

Without surface contact, the Festo air-bearing rails transport thin-film modules through the manufacturing process on a layer of air. The air-bearing rails are controlled by electric drives fitted with special suction cups that leave no residue on the thin film cells. A diagnostic module measures the exact distance between the glass and the air bearing and controls the air consumption to ensure energy-efficient operation.

## **Lifters**

In cases where the individual manufacturing steps in thin film module production cannot be linked together directly, lifters with their vertical handling systems can be used to transport the fragile but heavy glass plates gently, smoothly, and quickly. A pneumatic axis on each lifter provides weight compensation, while an electric axis with toothed belt drive controls the movement.

## **Integrated solutions**

Festo matches its automation solutions to the individual needs of customers so that customers can concentrate fully on their core competencies. The company provides support services for its complete solutions throughout the entire life cycle, ranging from consulting and engineering for complete handling solutions, commissioning of its ready-to-install systems, and comprehensive after-sales service.

Festo designs complete system solutions in accordance with customers' specifications and also takes care of testing and commissioning. The company's automation specialists then integrate the solution into the customer's production operations.

For sales information call Festo at 800-993-3786 and visit [www.festo.com/us](http://www.festo.com/us).

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Festo Images

Please refer to: Festo press photo  
Automatica0410\_H\_Portal\_1.tif

Caption to illustration: Contactless handling: this Cartesian high-speed H-gantry for photovoltaic applications exceeds all previous speed records. It runs 30 percent faster than any conventional Cartesian handling system – with comparable purchasing costs. (Photo: Festo)

Please refer to: Festo press photo Automatica0410\_H\_Portal\_4.tif

Caption to illustration: Contactless gripping: this rotary/linear module accelerates at 20 m/s<sup>2</sup> to a speed of 1.5 m/s. Bernoulli suction cups are the ideal solution for the front end of the rotary/linear module for handling solar modules or other fragile work pieces. (Photo: Festo)

Please refer to: Festo press photo Sliding\_Fork.tif

Caption to illustration: Less expensive and more compact alternative for clean-room robots: the infinitely adjustable sliding fork telescopic handling system for transporting thin-film solar cells from one process chamber to another. (Photo: Festo)

Please refer to: Festo press photo Automatica0310\_Tripod\_air\_bearing\_1.tif

Caption to illustration: Air-bearing rails are designed for the contactless transport of thin-film modules, coated on both sides, on an air bearing through the manufacturing process. (Photo: Festo)

Please refer to: Festo press photo Lifter.tif

Caption to illustration: This lifter transports thin-film modules gently and smoothly yet quickly. (Photo: Festo)

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